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Edison, New Jersey 08837
(908) 225-3990

16 August 1991

Mr. Edgar Kaup
New Jersey Department of Environmental Protection
Groundwater Abatement
Division of Water Resources
CN 029
Trenton, NJ 08625

Dear Mr. Kaup:

On behalf of L.E. Carpenter, Inc., Weston Services, Inc. (WSI) is pleased to present to you the enclosed document entitled **Supplemental Groundwater Sampling, L.E. Carpenter Site, Wharton, NJ.** This report discusses the field procedures, field observations and analytical results for the sampling of monitor wells MW-19, MW-20, MW-21, MW-13S, and MW-13I which took place in June 1991.

We have also prepared for your reference the attached set of hydrogeologic cross sections A-C, B-C, and E-C. Please refer to the map provided in the **Supplemental Groundwater Sampling** report for monitoring well locations. The data used to generate these sections was acquired 17 July 1991 and is presented in the attached table.

The three main groundwater contaminants of concern related to the L.E. Carpenter site are xylene, ethylbenzene and bis(2-ethylhexyl)phthalate. All three of these contaminants are less dense than water (i.e., their respective specific densities are 0.8751, 0.8670 and 0.9861)[1]. This means that these contaminants will tend to concentrate in the upper portion of the water column and, where the concentration is high enough, will separate out as a non-aqueous phase. This is especially true for bis(2-ethylhexyl)phthalate because it has a relatively low solubility in water (0.4 mg/L at 25°C).

The attached table demonstrates that none of the well couplets indicate strong downward vertical gradients. Indeed, some of the wells (i.e., MW-11I and MW-11D and MW-14S, I, and D) show strong upward vertical gradients. Therefore, since the main contaminants of concern are floaters and since the vertical hydraulic gradients are upward, it is not technically plausible that these contaminants would sink below the screened interval of MW-13I.

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[1]Montgomery, J.H. and Welhom, L.M., 1990 Groundwater Chemicals Deck Reference. Lewis Publishers, Inc., Chelsea, Michigan.

A comparison of the water levels in MW-13S and MW-13I reveals that these two values are nearly identical (see attached table). This means that these two wells are screened in the same continuous aquifer. The three attached cross sections show that the direction of groundwater flow in both the shallow and intermediate zones of this aquifer is towards the ditch.

Given that the contaminants of concern are floaters and given that the direction of groundwater flow in this portion of the Air Products property is toward the ditch, it is not plausible for the contaminant plumes to extend beyond the ditch. Even if they did, they would certainly be picked up by well cluster 13. This well cluster shows no evidence of site-related contamination.

This is why we feel that additional wells on the Air Products property are not warranted. As we mentioned on the telephone, we are in the process of preparing for additional well installation on the Wharton Enterprises property. If you feel that in light of this new data and the arguments presented here that additional wells on the Air Products property are still necessary, we will consider including them in the upcoming activities. This is why we would like to have your input, and we will call you in this regard on Wednesday 21 August 1991.

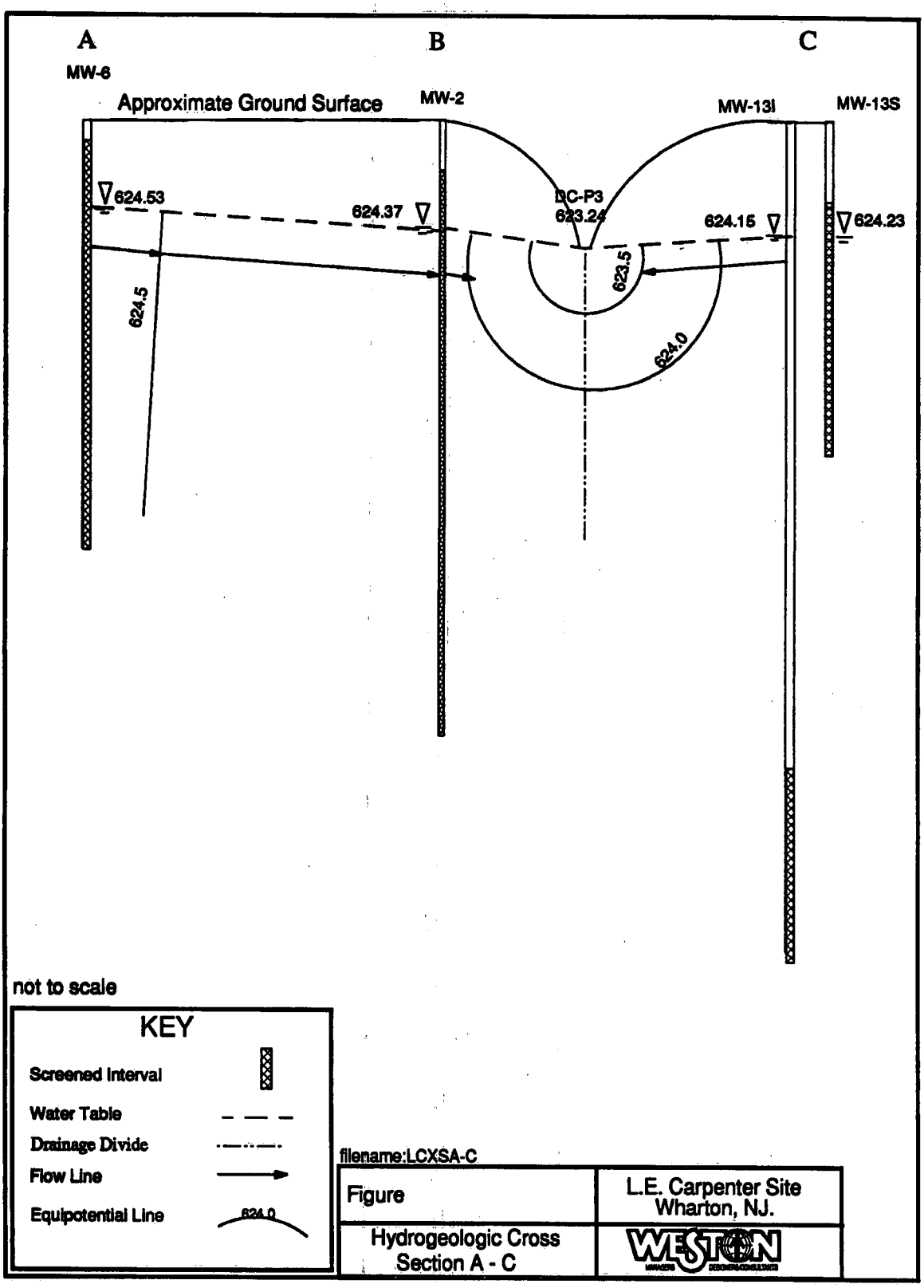
If you have any questions or comments, please feel free to contact Martin O'Neill or me in our Edison, NJ office at (908) 225-3990.

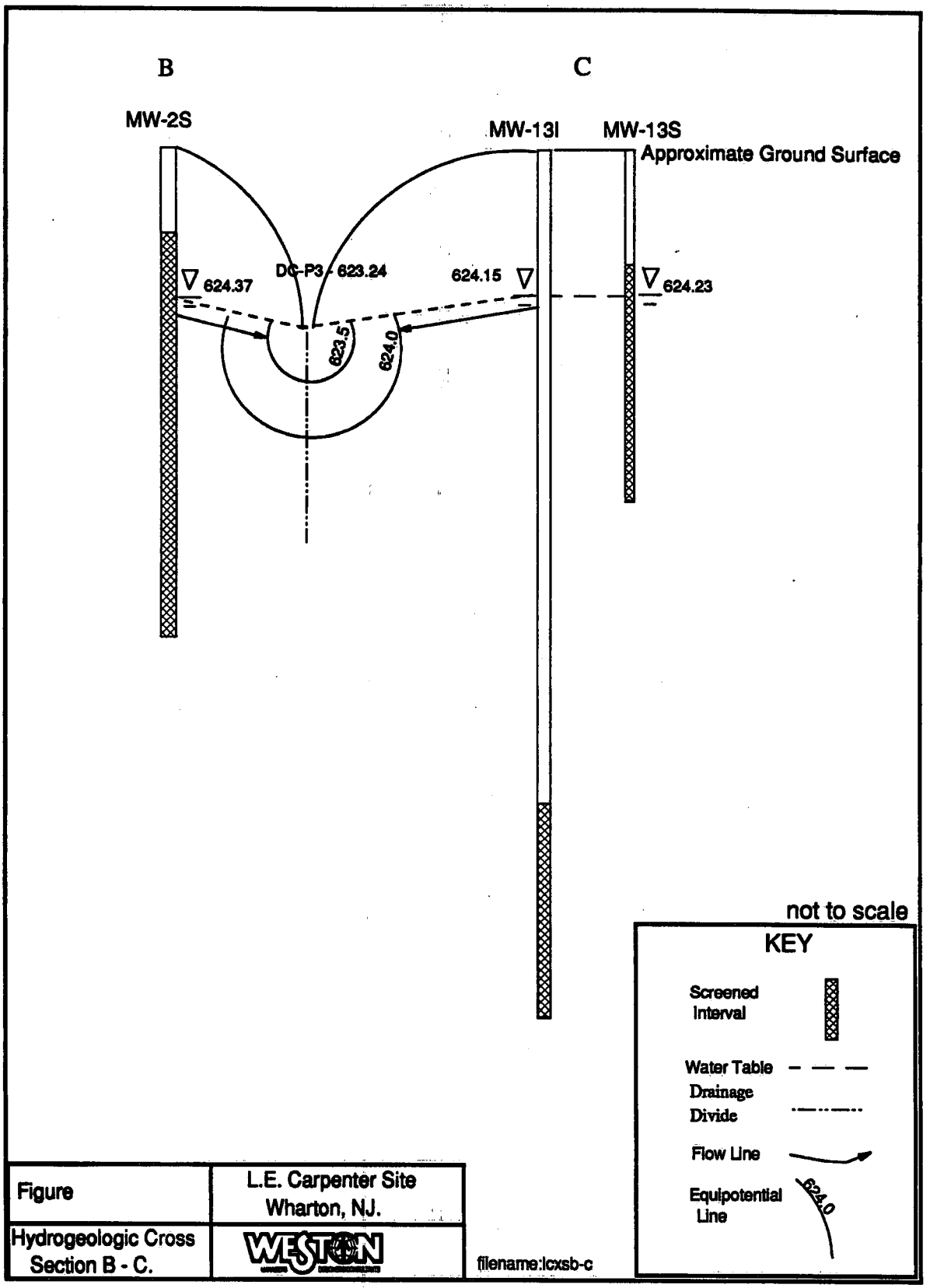
Very truly yours,

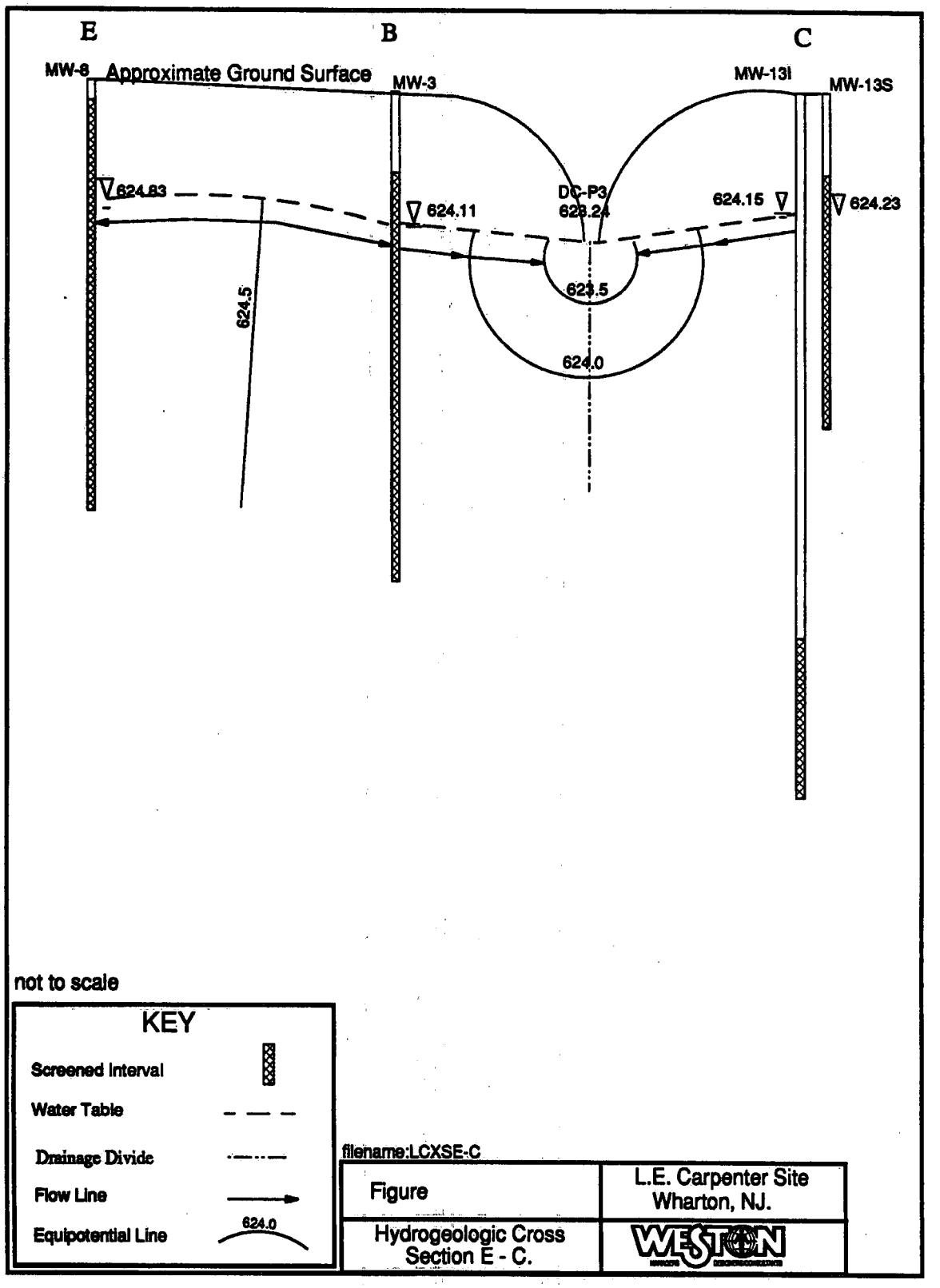
WESTON SERVICES, INC.

David Henderson
Project Manager

cc: George Blyskun, NJDEP - BGWPC
Cris Anderson, M.A. Hanna
Martin O'Neill, Weston
Jon Josephs, USEPA


A
B
C
MW-6
Approximate Ground Surface
MW-2
MW-13I
MW-13S
624.53
624.37
DC-P3
623.24
624.15
624.23
624.5
623.5
624.0
not to scale
KEY
Screened Interval
Water Table
Drainage Divide
Flow Line
Equipotential Line
624.0
filename:LCXSA-C
Figure
Hydrogeologic Cross Section A - C
L.E. Carpenter Site
Wharton, NJ.
WESTON


B
C
MW-2S
MW-13I
MW-13S
Approximate Ground Surface
624.37
DC-P3 - 623.24
624.15
624.23
623.5
624.0
not to scale
KEY
Screened Interval
Water Table
Drainage Divide
Flow Line
Equipotential Line
624.0
Figure
Hydrogeologic Cross Section B - C.
L.E. Carpenter Site
Wharton, NJ.
WESTON
filename:lcxsb-c


E
B
C
MW-6
Approximate Ground Surface
MW-3
MW-13I
MW-13S
624.83
624.11
DC-P3
628.24
624.15
624.23
624.5
623.5
624.0
not to scale
KEY
Screened Interval
Water Table
Drainage Divide
Flow Line
Equipotential Line
624.0
filename:LCXSE-C
Figure
Hydrogeologic Cross Section E - C.
L.E. Carpenter Site
Wharton, NJ.
WESTON

DEPTH TO WATER, WATER LEVEL ELEVATION AND PRODUCT THICKNESS DATA,
MEASURED ON JULY 17, 1991, L.E. CARPENTER SITE, WHARTON, NJ.

LOCATION	MEASURING PT. ELEVATION (FT MSL)	DEPTH TO PRODUCT (FT)	DEPTH TO WATER (FT)	WATER LEVEL ELEVATION (FT MSL)	THICKNESS OF PRODUCT
MW-001	639.18	14.2	14.50	624.68	0.30
MW-002	633.57		9.20	624.37	0.00
MW-003	632.56	8.05	8.45	624.11	0.40
MW-004	632.50		8.10	624.40	0.00
MW-005	632.42		7.51	624.91	0.00
MW-006	632.00	7.46	7.47	624.53	0.01
MW-007	630.68		6.70	623.98	0.00
MW-008	628.79		3.96	624.83	0.00
MW-009	630.18		5.50	624.68	0.00
MW-010	629.96	5.72	6.64	623.32	0.92
MW-11S	632.96	ALL PRODUCT	ALL PRODUCT	ALL PRODUCT	ALL PRODUCT
MW-11I	632.82		8.42	624.40	0.00
MW-11D	632.42		5.50	626.92	0.00
MW-12S	633.18	7.8	7.98	625.20	0.18
MW-12I	633.06		8.65	624.41	0.00
MW-13S	631.23		7.00	624.23	0.00
MW-13I	630.66		6.51	624.15	0.00
MN-14S	628.51		4.50	624.01	0.00
MW-14I	628.23		4.18	624.05	0.00
MW-14D	628.53		1.76	626.77	0.00
MW-15S	636.77		12.10	624.67	0.00
MW-15I	636.66		11.96	624.70	0.00
MW-16S	634.47		9.34	625.13	0.00
MW-16I	634.96		9.75	625.21	0.00
MW-17S	634.74		9.92	624.82	0.00
MW-17D	634.86		9.98	624.88	0.00
MW-18S	631.26		SPURIOUS DATA	SPURIOUS DATA	SPURIOUS DATA
MW-18I	631.04		6.38	624.66	0.00
MW-18D	630.77		4.58	626.19	0.00
MW-19	638.88		13.38	625.50	0.00
MW-20	636.77		11.58	625.19	0.00
MW-21	628.80		4.98	623.82	0.00
RW-1	637.38	12.66	12.68	624.70	0.02
RW-2	631.68	7.69	7.70	623.98	0.01
RW-3	631.99	7.53	7.56	624.43	0.03

TABLE ___ CONTINUED.

SURFACE WATER ELEVATIONS

LOCATION	FORESHOT READING	BACKSHOT READING	ELEVATION
BM-MW13S*			628.34
I-1		4.32	632.66
DC-P2	9.27		623.39
DC-P1	9.28		623.38
DC-P3	9.42		623.24
DC-P4	9.45		623.21
DC-P5	9.79		622.87
BM-1**			629.85
RP-1	3.7		626.15
BM-MW4***			632.31
I-2		0.88	633.19
RP-2	8.26		624.93
BM-3****			626.49
I-3		4.47	630.96
RP-3	7.02		623.94

* Ground surface at MW-13S was used as the bench mark for shooting in drainage channel points DC-P1. through DC-P5.

** BM-1 is located on the top of the concrete wall which lines the river in the vicinity of Building 12.

*** The top of the internal casing in MW-4 was used as the bench mark in the vicinity of RP-2.

**** BM-3 is marked by a steel bolt which is driven into a pin oak tree in the vicinity of RP-3. The pin oak tree is marked by a red flag.

SPURIOUS DATA - Aquisition of accurate measruements in MW-18S was not possible due to partial blockage of the well casing by algal growth.

FILE: WL791